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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,618	02/23/2004	Christopher M. Look	8433P009	2967

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EXAMINER	
LEUNG, WAI LUN	

ART UNIT	PAPER NUMBER
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/785,618	LOOK, CHRISTOPHER M.	
	Examiner	Art Unit	
	DANNY W. LEUNG	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/3/2010 has been entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1, 2, 5, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamaguchi** *(US006847743B2)*, in view of **Ryhorchuk et al.** *(US007113698B1)*.

Regarding claims 1 and 9, **Yamaguchi** discloses A method comprising:

splitting an incoming optical signal into a first and a second optical signals *(fig 1, receiving signal from transmission line fiber 4, splitter 10-3 split signal into two)*;

sending the first and the second optical signals to a first and a second equipments in an optical network node, *(fig 1, polarization scrambler 2-1 is the first equipment and the polarization scrambler 2-2 is the second equipment),* respectively, the second equipment being a protection module for the first equipment *(col 5, ln 20-25, the polarization scrambler 2-1 is a "current system" and the other line is "auxiliary system")*;

monitoring a first and a second outgoing optical signals from the first and second equipments *(fig 1, detecting circuit 12-1 and 12-2 monitors the output of the polarization scrambler 2-1 and 2-2)*;

using a switch to select outputting only one of the first and the second outgoing optical signals from the optical network node via a switch *(fig 1, switch 14-1, 14-2, and switch driving circuit 15 is functionally equivalent to a switch since they only select one of the first and second optical signal to be outputted by one of the polarization scramblers)*;

outputting the only one of the first and the second outgoing optical signals selected *(col 5, ln 18-31, the switches and the scrambler driving circuits are set to ON and OFF so that only one is outputted)*;

declaring a failure of the optical network node if only one of the first and the second outgoing optical signals has failed *(col 5, ln 33-43, controlling circuit 13 declare a failure of the optical network node by outputting a control signal to the switch driving circuit to attempt to recover this failure)*.

Yamaguchi teaches a method of optical signal recovery by using a switch to select an auxiliary system *(second equipment)* output when it detects a fault in the current system *(first equipment)*, *as discussed above,* for the purpose of generating a working output signal using the auxiliary system *(second equipment)*.

Yamaguchi does not expressly teach how the system reacts when both of the signals have failed. However, it would have been obvious for a person of ordinary skill

in the art at the time when the invention was made to recognize that if both outgoing optical signals from the current system *(first equipment)* and from the auxiliary system *(second equipment)* are failed, a working signal output is impossible to accomplish even if it were to switched to the auxiliary system *(second equipment), therefore,* it makes no difference to the system output by changing or maintaining the state of the switch, and there would be no point of switching to the auxiliary system or to the current system.

For example, **Ryhorchuk**, from the same field of endeavor, teaches a known technique of optical signal fault detection, comprising monitoring a first and a second outgoing optical signal from a first and second equipment *(col 13, ln 9-15, dropped channels are observed by sensors coupled to the first node),* and if both of the first and the second outgoing optical signals have failed, determining a failure is outside of the optical network node and maintaining a signal selection stat of the switch to continue outputting the only one of the first and the second outgoing optical signal in the same direction without declaring that the optical network node has failed *(col 13, ln 15-41, if the equipment switch does not restore the dropped traffic, that means both the working and protection signals have failed; so instead of keep switching between the two failed signals, this problem list is then forwarded to upstream nodes so that equipment switch can be performed at the upstream node, so that the upstream node can include that in the problem list and determine where the problem is).*

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to apply **Ryhorchuk's** known technique onto **Yamaguchi**'s known

system as an improvement such that when both first and second outgoing optical signal from **Yamaguchi's** first and second equipment have failed, determining a failure is outside of the optical network node**,** and maintaining a signal selection stat of the switch to continue outputting the only one of the first and the second outgoing optical signal in the same direction without declaring that the optical network node has failed *(for example, when equipment switch doesn't fix the failure, that means both the current and auxiliary system has failed, therefore there is no point switching back and forth between the two systems, the fault has to be at an upstream node as suggested by Ryhorchuk)*. The motivation for doing so would have been to be more effectively perform fault detection, location, and isolation by determining the location of signal failure *(whether it is equipment failure or line failure).*

As to claims 2 and 10, **Yamaguchi** further teaches bypassing the first optical equipment if the first optical signal has failed and the second optical signal has not failed *(col 5, ln 32-43),* ; and

bypassing the second optical equipment if the second optical signal has failed and the first optical signal has not failed *(col 9, ln 12-20, the switching unit is capable of switching between the polarization scramblers)*.

As to claim 5, **Yamaguchi** further teaches amplifying the first and the second optical signals at the first and second equipments, respectively *(fig 7, amplifier 17-1 and 17-2).*

4. Claims 3, 4, 11, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamaguchi** *(US006847743B2)*, in view of **Ryhorchuk et al.** *(US007113698B1), as applied to claims 2 and 9 above, and further* in view of **Palacharla et al.** *(US 2004014174 1A1)*.

Regarding claims 3 and 11, the combination of **Yamaguchi and Ryhorchuk** discloses the method of claims 2 and 9 as discussed above. **It** does not disclose expressly sending an alarm if either the first or the second optical signal has failed. **Palacharla**, from the same field of endeavor, teaches sending an alarm if either a first or a second optical signal has failed *(paragraphs 41, if it detects a failed signal was sent or received from the optical equipment, it generates a transponder failure alarm)*. Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to generate an alarm if the first or second optical signal in the combination of **Yamaguchi and Ryhorchuk**'s system has failed as suggested by **Palacharla**. The motivation for doing so would have been to easily identify location of the fault.

As to claims 4 and 12, **Palacharla** further teaches declaring a failure has occurred outside of the optical network node if both the first and second optical signal have failed *(paragraphs 42 a network failure is detected, failure detection is based on failure signals received from or transmitted to client 204, fig 2 shows the client A 204a is receiving signal from both the working and the protection modules 208)*.

5. Claims 6-8, and 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yamaguchi** *(US006847743B2)*, in view of **Ryhorchuk et al.** *(US007113698B1),* as applied to claim 1 above, and further in view of **Kuroyanagi et al.** *(US006433900B1)*.

Regarding claims 13 and 19, the combination of **Yamaguchi and Ryhorchuk** discloses the protection switching method with a first and second equipments in an optical network node in accordance to claim 1 as discussed above. **It** does not disclose expressly wherein the method is applied to an apparatus comprising a first optical equipment in an optical network device having a first plurality of input ports and a first plurality of output ports; a plurality of splitters, and a plurality of optical signal switches. However such optical system is common and well known, for example, **Kuroyanagi,** from the same field of endeavor, teaches an apparatus *(fig 8A),* comprising: a first optical equipment in an optical network device having a first plurality of input ports and a first plurality of output ports *(fig 8A, XC Node o-system has a plurality of input and output ports)*;

a second optical equipment in the optical network device having a second plurality of input ports and a second plurality of output ports, the second optical equipment being a protection module of the first optical equipment *(fig 8A, XC Node 1-system has a plurality of input and output ports)*;

a plurality of optical signal splitters, each of the plurality of optical signal splitters coupled to one of the first plurality of input ports and one of the second plurality of input ports, to split an incoming optical signal into a first and a second optical signals and to

input to the first and the second optical equipments, respectively *(fig 8A, optical distributor 60 split the incoming signals λ_1 -λ_n to the o-system and 1-system, respectively),* ; and

a plurality of optical signal switches *(fig 8A, protection switch 61),* each of the plurality of the optical signal switches coupled to one of the first plurality of output ports and one of the second plurality of output ports.

Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to apply the general protection switching methods as discussed above regarding claim 1 as a known technique to improve a known system with a plurality of input ports, a plurality of output ports, a plurality of splitters, and a plurality of switches such as that of **Kuroyanagi's,** and the results would have been predictable. In *Dann v. Johnston* 525 U.S. 219, 189 USPQ257 (1976) The Court held that "[t]he gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonable skilled in the art." **MPEP 2143** Section D.

Regarding claims 6, 16, and 22, the combination of **Yamaguchi and Ryhorchuk** discloses the protection switching method in accordance to claim 1 as discussed above. **Yamaguchi** does not disclose expressly wherein each of the first and second equipments comprises a wavelength switch module. **Kuroyanagi**, from the same field of endeavor, teaches a protection switching method having a first and second equipments comprises a wavelength switch module *(fig 8A, optical XC node in 1-system and 0-system).* Therefore, it would have been obvious for a person of ordinary skill in the art at the time

of invention to apply the general protection switching method as discussed above regarding claim 1 as a known technique to improve a known system where a first and second equipments comprises a wavelength switch module suggested by **Kuroyanagi**, and the result of which would have been predictable

As to claims 7, 17, and 23 , **Kuroyanagi** further teaches wherein each of the first and second equipments further comprises a multiplexer and a de-multiplexer *(fig 8A)*.

As to claims 8, 18, and 24, it is common and well known to use amplifiers anywhere in an optical system, so as to improve signal quality along the optical signal transmission line, therefore, it would have been obvious for a person of ordinary skill in the art at the time when the invention was made to use and amplifier for amplifying the first and the second optical signals at the first and second equipments, respectively, and the result of which would have been predictable.

As to claims 14 and 20, **Yamaguchi** further teaches wherein the optical signal switch selects the second output optical signal from the second optical equipment if the first output optical signal from the first optical equipment fails and the second output optical signal from the second optical equipment has not failed *(col 5, ln 32-43)*.

As to claim 15 and 21, it would have been obvious to have the optical signal switch selects the first output optical signal from the first optical equipment if the second output optical signal from the second optical equipment fails and the first output optical signal from the first optical equipment has not failed *(it is obvious to switch to a working equipment from a failed equipment)*.

Response to Arguments

6. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of new grounds of rejections.

Ryhorchuk is now cited to demonstrate a known technique of determining a failure outside of the current node *(line failure instead of equipment failure)* if both of the first and the second outgoing optical signals have failed *(when both working signal and protection signal is failed and equipment switching does not help).* Which can be applied to **Yamaguchi's** known system and the result of which would have been predictable to one of ordinary skill.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to optical communications with protection switching in general:

(US-20020044315 or US-20050135810 or US-20050180316 or US-20040208578 or US-20040208506 or US-20040141741 or US-20040114925 or US-20040105136 or US-20020021659 or US-20030180047) or (US-6980711 or US-6950215 or US-6934469 or US-6433900 or US-7099578 or US-6947623 or US-6983108 or US-6771908 or US-6819875 or US-7197241 or US-5594581 or US-5130837 or US-6307653 or US-6850515 or US-6754449 or US-7161898 or US-6898376 or US-6556319 or US-6477288 or US-

7242860 or US-5539564 or US-6868232 or US-5559622 or US-7174096 or US-7283748 or US-7283740) or (US-6847743)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANNY W. LEUNG whose telephone number is (571)272-5504. The examiner can normally be reached on 10:00am-8:00pm Mon-Thur.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner
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